

given by the author as to the total weight carried by any one tree or shrub, but he calls attention to the fact that the twigs on the outside of the tree had more ice to bear than those on the inside, and that the smaller, by resting against each other and the larger ones, caused the whole mass of ice inclosing a tree to freeze together as a unit, so that one branch could not be moved without moving the rest.

The varieties of trees that were most easily injured were the soft maples, the arbor vitæ, pines, honey locusts, oaks, ash, peach, and apple; those least injured were the cypress, the ginkgo, and the horn beam.

The effect of the strong wind upon a tree is, in general, not so great as that of the sleet. The weight of the latter is a steady downward pressure while the wind acts in temporary gusts and more nearly horizontally. When the wind comes in violent gusts, blowing from above downward, it may be as destructive as sleet.

If a voluntary observer could arrange to catch all the sleet that he can shake down from a heavily laden tree, and add a small percentage for that which melts and is lost to his measurement, he could easily give us some interesting data with regard to the total weight of sleet carried by trees of different heights, ages, and species.

THE COLD WAVES OF JANUARY AND FEBRUARY, 1864.

Mr. J. Nelson Trask, of New Salem, Franklin County, Mass., in response to the Editor's note in the January REVIEW, page 17, writes as follows with reference to the cold wave referred to by Mr. R. M. Harding:

I was on the west shore of Port Royal Island, S. C., where the sharpest turn of temperature began on the afternoon of Friday, January 1, 1864. I had no thermometer, but here are the facts from my record:

New year came in with a sweeping northwester, which drove the recent warm storm and thunder showers out to sea. (That is the way we used to say it.) The day, Friday, was very windy. Saturday morning ice three-fourths of an inch thick in a rain barrel 18 feet above the ground. No thawing through the day. Sunday morning, January 3, ice $1\frac{1}{2}$ inch thick. During the day the freeze let up; thawed considerably.

February 18 brought another turn; cold with a northeasterly wind; a little fine snow at evening; night cold.

February 19.—Cold, with north wind.

February 20.—Morning calm; cold enough to freeze over the pool northeast of the stable and make ice half an inch thick in the water barrel; later, wind sprang up from the northeast, veering to northwest and west; milder at evening; flowers laid out for their own funerals; orange leaves made to wilt.

February 21.—Frost, but the temperature evidently much higher than yesterday morning. The frost of the 20th seems to have blasted all the orange trees on this, Woodward, place. The live oaks, though by no means killed, are much denuded; the magnolias are as green as ever, so the bays, but the myrtles are losing most of their leaves; oleanders have felt the cold severely, some apparently killed; rosebuds that would have opened within a week were killed; narcissus, daffodil, jonquil fell flat upon the ground. The orange and oleander trees were not killed to the ground, but the limbs were withered down about an arm's length; no fruit and no nosegays next summer from these trees. Creeping blackberries fruited wonderfully.

A BLACK RIVER THAW.

In the northern portion of the State of New York, the Adirondack region, which is famous for its heavy snowfall, is also subject to corresponding severe floods due to the melting snow. The Black River which empties into Lake Ontario at Sacketts Harbor, drains the southwestern quarter of the Adirondack region and the intermediate country to the shore of Lake Ontario, a region that is particularly subject to long snowstorms followed by warm rains. As the thaw and the high water are the almost inevitable consequences of a long snowstorm, the latter is humorously called the "Black River thaw."

SUDDEN DISAPPEARANCE OF ICE IN THE LAKES.

It is often remarked that ice disappears from the Great Lakes most suddenly and unexpectedly. At night-time a vessel may be surrounded in all directions, but by the next morning the ice is all gone without the assistance of any perceptible current. It is popularly said that the ice gets honeycombed and rotten and sinks; but ice being much lighter than water will not sink. The temperature of melting ice is 32° F., while the temperature of the water a little way below the ice is much higher. There is, therefore, a vertical interchanging circulation, the warmer water from below rises and melts the under surface of the ice; the melted ice, having a temperature of 32° F., sinks, but the ice itself does not. When the ice is observed to become honeycombed, it means that the lower warmer water is rising and melting it. A similar effect is, of course, produced by warm rain water. To a certain extent strong, dry winds, by evaporating the surface of the ice, cause it to disappear; if the winds are warm the ice becomes honeycombed and soft, but if the winds are very cold the ice remains firm and hard until it has disappeared. Under the influence of cold northwest winds the surface of the ice remains clear, clean, hard, and cold, so that the blocks and fields maintain their blue color, whereas honeycombed ice is whitish.

BENEFITS AND INJURIES DUE TO STORMS.

We hope that some one will have the patience to make out a balance sheet showing the good and evil done by storms throughout the whole United States. We notice that one of the severest storms, most disastrous in the Eastern States, is said to have been of untold benefit to the ranges of New Mexico and Colorado. The large amount of snow that falls in the mountains may avert a water famine during the coming summer. Again, we often notice that the winds which bring heavy rains to the Pacific coast bring droughts to the interior, and the winds that destroy vessels on the Atlantic coast bring rains to the interior of the Atlantic States. The cold waves that injure the vegetation of the Gulf States dissipate the yellow fever. No matter how much man complains of the weather, it would seem after all to be very satisfactory to the human race in general; it would seem to be a case where man grumbles at the blessings that are showered upon him, and we believe that a careful review of every aspect of the question would tend to make us better content with existing arrangements. Every newspaper paragraph enumerating the injury done by a storm should be paralleled by one enumerating its blessings.

A certain snowstorm is said to have cost the Chicago and Alton Railway Company over \$25,000; the wages paid to the snow shovelers, the diminution of freight and passenger business, the extra cost of handling traffic, the spoiling of delicate freight, the double heading of the engines, the expense of the snow plows are all counted as a loss to the railroad; but the farmer welcomes the snow for the good it does to the crops in ground, and the railroad will doubtless find its losses in the winter more than balanced by its gain in business during the summer.

WEATHER BUREAU MEN IN UNIVERSITIES.

Mr. Alexander G. McAdie, Forecast Official, as honorary lecturer in meteorology in the University of California, has delivered a series of four lectures on meteorology at Berkeley, as introductory to scientific work in this department. The titles of his four lectures are: Forecasting the Weather; Lightning; Exploring the Air; Storm Structure.